

Indo-Pacific Migration and Colonization— Introduction



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UNDERSTANDING OF INDO-PACIFIC PREHISTORY during the late Holocene is changing continually and no more so than in thinking about issues of migration and colonization. These can be regarded as the mobile and relatively sessile phases respectively of initial or later human settlement in oceanic landscapes. The Indo-Pacific region comprises Island Southeast Asia (ISEA), Australia, and the Oceanic islands, to which are added the remote outlier of Madagascar. In Indo-Pacific prehistory, especially within the last 5000 years, the movement of populations by voyaging, coastally and across sea-gaps of up to several thousand kilometers, is perhaps the most notable feature and the most influential in shaping the geography of human prehistory. The repeated creation and development of new societies and interactive networks, the introduction of plants, animals, and productive systems, the advent of new technologies, and the anthropogenic impact upon island environments are integrally related consequences of maritime colonization.

Areas of particular interest in terms of migration and colonization during the late Holocene are ISEA and Remote Oceania, which are seen as closely connected by the expansion of Austronesian-speaking populations. The Austronesian connection, however, has been established more convincingly in linguistic and genetic propositions than by archaeological field research and analyses. In part, that is simply because inferences about origin are obtained more readily from language and molecular biology than from material culture or other archaeological remains, but differences in approach between the regions have also frustrated the articulation of ISEA and Oceanic archaeologies. For example, virtually all of the early pottery sites investigated in ISEA are caves or shelters and on sampling grounds alone they provide a debatable basis of comparison with Lapita open sites farther east. In addition, while the late Holocene prehistory of Remote Oceania concerns human migration to, and colonization of, islands that hitherto had seen no human settlement, ancient and still-occupied anthropogenic landscapes of much larger and more diverse islands provided the setting for late Holocene prehistory in ISEA and Near Oceania. Initial colonization of these was much more remote in time and circumstance. In this Introduction we comment on issues

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raised by the present collection of papers as they appear relevant in thinking about the settlement of the Indo-Pacific from west to east.

PLEISTOCENE MIGRATION

Modern humans penetrated east of the Sunda Shelf at least 39,000 radiocarbon years ago but little is known about the migratory process or the timing, direction of movement, and speed at which empty landmasses were infilled following colonization (O'Connor in press). This is largely due to limited archaeological sampling across the region. The Pleistocene hunter-gatherer colonizations have usually been configured as less purposeful than mid- to later Holocene migrations by presumed agriculturalists, and the trajectory of island use has been characterized as low impact, and economies as conservative, prior to the appearance of pottery in the archaeological record. However, the depauperate fauna reflected in the earliest occupation levels of sites in most islands east of the Sunda Shelf indicates that the impact of first contact may have been underestimated. There is a high probability that we have not yet located the "early colonization phase" sites in ISEA and that endemic extinctions following from it will turn up as more research is carried out and more detailed identifications and analyses of the assemblages are undertaken. The causes and consequences of faunal extinctions in ISEA remains an under-investigated topic (O'Connor and Aplin in press).

That Pleistocene migration throughout Island Southeast Asia was not unidirectional or a one-off event is now demonstrated by the appearance of exotic animals in the terminal Pleistocene and early Holocene archaeological records of Timor and Halmahera (Bellwood et al. 1998; O'Connor 2006). In Timor, for example, the translocation of the marsupial phalanger or cuscus (*Phalanger orientalis*) from New Guinea occurred prior to 9000 B.P. (O'Connor 2006). This species is not found on intervening islands suggesting that it was moved directly. Interestingly, such early Holocene translocations occur from east to west, even in the case of Timor where the voyaging distances are long. Despite the richness of Pleistocene-early Holocene faunas on the Asian mainland, there are no examples of west-east translocations at this early date. Human transport of the cuscus from New Guinea, an area where independent development of cultigens in the early Holocene has been archaeologically demonstrated, also raises the possibility that it accompanied a wider suite of introductions, including root and tree crops (O'Connor 2006). This theme is taken up by Kennedy (this volume) in her discussion of the transmission of edible bananas, notably the movement westward to the African coast before 5000 years ago. Other directions of dispersal may have included south to north. Anderson and Summerhayes (this volume) discuss the recovery of a waisted, ground-stone axe in the Yaeyama Islands of Japan and speculate that it might represent an early Holocene passage out of Near Oceania.

Such research conclusions indicate that the development of interaction spheres in Wallacea, and perhaps connections with New Guinea, may have contributed significantly to the development of those late Holocene ISEA societies that have been attributed more substantially to an Austronesian dispersal out of Taiwan (Bellwood 1997). The influential "out of Taiwan" model describes a large-scale, but punctuated, migration beginning about 6000 years ago in southern China when Mongoloid peoples migrated east to Taiwan. Bellwood (e.g., 1997:70, 202, 203) argued that these Austronesian-speaking migrants were cereal crop cul-

tivators with a suite of domesticated animals, most prominently pig, dog, and chicken (Bellwood 1997:99). Around 4500 years ago, one branch crossed the Luzon Strait to the Philippines and with the selective advantage bestowed by farming, these groups moved rapidly south and eastward into regions of ISEA replacing the long resident hunter-gatherer populations. They reached Island Melanesia where they found expression in the Lapita Cultural Complex, and farther on again to the uninhabited islands of Oceania to the east and Madagascar to the west.

MID-LATE HOLOCENE MIGRATION IN THE WESTERN PACIFIC

Several recent re-evaluations of the ISEA Neolithic phenomenon (Anderson 2006a; O'Connor 2006; Szabó and O'Connor 2004; Terrell 2004) have critiqued the unilinear and unidirectional nature of the "out of Taiwan" model. They note, *inter alia*, that large numbers of shell artifacts which are common in Lapita contexts and which were earlier thought to derive from the Taiwanese Austronesian techno-complex (Bellwood 1997:235), have been recovered from early Holocene assemblages in East Timor (O'Connor 2006; O'Connor and Veth 2005; Szabó and O'Connor 2004). These include shell fishhooks and drilled shell beads. A shell adze of early Lapita form, but from East Timor, has also been directly dated to the early Holocene, but as it was a surface find with no provenance against which to cross-check the age it is possible that it was manufactured on old shell (O'Connor 2006). Drilled shell beads have previously been found in pre-pottery levels of sites throughout ISEA but have usually been assumed as vertically displaced from pottery bearing horizons. Refinement of archaeological recovery methods and AMS dating of individual artifacts has led to the revolutionary finding that both beads and fishhooks predate the pottery Neolithic by more than 5000 years. These finds may lend credence to earlier claims for the pre-Lapita development of shell fishhook technology in Island Melanesia (Smith and Allen 1999) and provide a further example of east-west transmission, although independent development, in East Timor for example (perhaps as a consequence of the depletion of terrestrial fauna), or earlier west-east transmission remain valid hypotheses.

The research reported here by Dobney and colleagues provides another direct and important challenge to the out of Taiwan model. Dobney et al. demonstrate that ancient and modern specimens of pigs throughout the Pacific are uniformly Pacific Clade haplotypes. The complete absence of Pacific Clade haplotypes from mainland China, Taiwan, the Philippines, Borneo, and Sulawesi indicates that if people did disperse from Taiwan to the Pacific via the Philippines as purported by the "out of Taiwan" model, they did it without domestic pigs. So what is the origin of the pigs associated with both the Lapita cultural complex in Island Melanesia, and the pigs subsequently transported to Polynesia? As Dobney et al. (this volume) show, the Neolithic settlers who arrived in the northern Moluccas around 3500 B.P. and those who moved into Oceania, must have acquired pigs prior to this date from somewhere other than Taiwan and the Philippines. They believe southern Wallacea is a likely candidate, a region where significant cultural changes appear to take place prior to and during the initial spread of the Neolithic, and where their data show high frequencies of introduced domestic pigs exclusively possessing the Pacific signature.

Another linchpin of the out of Taiwan Austronesian dispersal model has been the distribution of red-slipped pottery throughout ISEA and its assumed role as the precursor for Lapita wares. Recent re-evaluations of pottery from early Southeast Asian assemblages have prompted Anderson (2006a) to suggest that there may have been more than a single pottery "Neolithic" dispersal into ISEA (see also; O'Connor 2006; Spriggs 2003) and that the mainland is a possible source area for some pottery assemblages in Sulawesi and the Philippines. Bulbeck's analysis (2004:115) of the early pottery from sites in west-central Sulawesi also draws closer parallels with mainland Asia than Taiwan. In common with some aspects of the model by Solheim (1996), Anderson (2006a) also questions the drivers behind the ISEA Neolithic dispersal. Whereas some scholars (e.g., Bellwood 1997:70, 202, 203; Diamond and Bellwood 2003) have argued that it depended upon linked demographic and agricultural factors, Anderson notes the significance of probable advances in maritime technology, especially the advent of the sail, and proposes that major dispersal episodes were coupled with periods of sustained changes in wind direction and velocity inferred from the millennial-scale pattern of the El Niño–Southern Oscillation. In addition, Anderson (2006a) and others (O'Connor 2006; Paz 2002, 2004; Spriggs 2003) have noted the scarcity of direct evidence for an association of agricultural expansion and early pottery levels in ISEA.

MIGRATION AND COLONIZATION IN REMOTE OCEANIA

Turning to migration and colonization in Remote Oceania, the region at issue in most of the papers here,¹ a casual review would suggest, correctly, that broad conclusions of long standing have changed little, if at all. We still see that late Holocene migration came exclusively through ISEA and the New Guinea region into western Micronesia and eastern Melanesia and that Lapita expansion, about 3000 years ago, reached as far as west Polynesia. Although not unanimous, the consensus of opinion is that eastward expansion was thereafter episodic with a major period of stasis between West and East Polynesia. The mechanism of migration is generally agreed as having been the voyaging canoe, either or both outrigger and double canoe, and the migrants were overwhelmingly speakers of Austronesian languages. The success of long-term colonization is attributed to the transport of a tropical agricultural complex. Yet, as many of the papers in this volume show, beneath the surface of that broadly consensual orthodoxy, there is considerable discussion and uncertainty.

In part, our uncertainty about migration patterns reflects varied results from continuing fieldwork and analysis, including in archipelagos largely bypassed by earlier archaeological programs. In the eastern Micronesian atolls, the initial colonization of which is generally ascribed to early post-Lapita movement from the southwest or southeast (Rainbird 2004), Intoh (this volume) has focused upon Fais Island in the Carolines. She suggests initial settlement from Southeast Asia, largely upon the evidence of *Rattus rattus* from early occupation levels. In the Australs, another group that has seen little systematic research, initial colonization also appears relatively late. A recent project in Rapa (Kennett et al. 2006), showed that initial settlement was soon after A.D. 1000, and Bollt (this volume) describes an Archaic East Polynesian assemblage of similar or younger age from Rurutu Island. These data suggest, logically enough, that many geographically remoter or

marginal groups in Remote Oceania were not occupied during the initial migrations, a point emphasized by recent data from the Phoenix and Line groups (Anderson et al. 2002; Pearthree and Di Piazza 2003), Easter Island (Hunt and Lipo 2006), and South Polynesia (New Zealand and its outlying archipelagos; Anderson 2006b).

Conversely, the recent evidence of Lapita expansion has shown some earlier-than-expected movement to the east. Only a few years ago, the latest of numerous minor revisions of Lapita colonization chronology suggested that the eastern region (Fiji and West Polynesia) was reached 2900–2800 B.P. (Anderson and Clark 1999; Burley et al. 1999). Now it seems that the first Lapita colonists, bearing ceramics of Western Lapita design and New Britain obsidian, reached the region around 3000 B.P. (e.g., Burley and Dickinson 2001). In Vanuatu as well, Western Lapita ceramics, both in form and design, and New Britain obsidian, have been recovered from several sites dating to around 3000 B.P. Continuing discovery of Lapita sites in central and southern Vanuatu, including a major cemetery at Teouma (Efate Island), drew the attention of Bedford and Spriggs (this volume) to the Lapita “gap” in northern Vanuatu, where consideration of migration strategy alone would suggest a high probability of Lapita colonization, now confirmed.

Migration strategy was, of course, very largely dependent upon voyaging performance, and that remains an area of debate in Indo-Pacific archaeology. Since the pioneering project by Levison et al. (1973), based on an idea that occurred to Gerry Ward as he lay in his London bath, computer simulation has been directed at the topic, notably by Irwin (1992) and colleagues. It has the considerable advantage of providing numerous test-runs with which to evaluate assumptions that must be made both explicit and operational in the simulation models, but the disadvantage that those assumptions are only as good as the ethnographic evidence from which they are drawn. Callaghan and Fitzpatrick (this volume) have assumed nothing more about the nature of watercraft other than that they could bear a crew downwind. Their simulation, thereby limited to drift voyaging, shows that there were periods when, against the predominant easterlies, it was possible to reach western Micronesia from Southeast Asia, a point consistent with some linguistic and archaeological hypotheses about initial colonization (Clark 2004; Intoh 1997; Pawley and Ross 1993), complex as that seems to have been (Petersen 2006).

Irwin (this volume, and see Irwin 1992, 2000) continues to unfold an exegesis of Remote Oceanic seafaring and biogeography that takes ethnographic data of voyaging into account. This has the merit of greater realism, given that Levison et al. (1973), showed that drift voyaging could hardly account for much of the settlement of Polynesia, but it remains hostage to interpretation of historical evidence which, as alternative views suggest (Anderson 2000, 2001), remains frustratingly ambiguous. For example, while the earliest written account of a Maori sail might suggest a stepped mast (Irwin, this volume), a contemporary drawing of the same vessel in which the rig is depicted with particular clarity by Spöring (Anderson 2003:79), shows otherwise, consistent with an implication of exclusive offwind sailing mentioned in other early accounts. This is a fundamental issue about the prehistory of voyaging technology that is critically in need of the recovery of pertinent archaeological remains.

Migration seafaring was related to colonizing behaviors in various ways, one of them being through the transport of cultivable plants and domestic animals, not to mention weeds, commensal animals such as rats, and so on. The conventional model to describe this process is the "transported" landscape (E. Anderson 1952; Kirch 1982). On the one hand this recognizes the objective extent to which the landscapes of so many Pacific islands have been modified by human influence, and on the other it implies a sense of deliberate and repetitive re-creation, especially of agro-arboreal production. Useful as it is, the concept loses its clarity when it is applied to early colonization. Throughout Remote Oceania, there is a general pattern of initial emphasis upon fragile but highly accessible resources of high food value, such as flightless birds and nesting turtles. In some cases, as in much of South Polynesia, this was to the virtual exclusion of agriculture, and agricultural activity elsewhere was probably subordinate to foraging in most earliest colonizing phases. One effect of this, as Addison (this volume) suggests, could have been that nutritional imperatives resulting from an over-abundance of dietary protein may have focused agriculture upon a single crop of high and rapid carbohydrate production, such as taro. The implication is that it was only after easily accessible protein levels declined that the transported landscape could be re-created. Addison focuses particularly upon the protein-carbohydrate balance, but to the extent that animal fats could substitute for carbohydrates (Davidson and Leach 2001), there may have been a similarly focused, but relatively slight initial emphasis upon agriculture with the same efflorescence later as protein-fat resources declined.

An additional point to make here is that the transported landscape probably came seldom as a single package. This seems especially the case in the Lapita era. The main Oceanic root crops are not evident in early Lapita macro-botanical remains (Latinis 2000; Matthews and Gosden 1997), and in eastern Lapita at least, it is doubtful whether pigs and dogs (references in Anderson 2003) were carried in the initial migrations, and even the chicken may have arrived slightly later than the first landfalls (Steadman et al. 2002). Kennedy (this volume) suggests that the systematic complexity of Oceanic bananas is further evidence of multiple introductions rather than a single dispersal.

That point underscores the probability that migration was seldom a single movement, and much more often a phase of movements back and forth, as described in theoretical approaches (e.g., Anthony 1990; Lewis 1982), except where islands were very far apart, as in marginal East and South Polynesia (Anderson 2005). It follows that migration was not restricted to the founding events of island settlement; rather, it continued as a significant component of the formation and re-formation of island cultures up to the historical era and, of course, within the present day. Bedford and Spriggs (this volume), have begun to tease out the relative contributions of continuing migration and local innovation in the post-Lapita prehistory of Vanuatu. They argue that both the archaeological and ethnographic records are relatively insensitive to the real complexity of cultural change at the local level, noting in a nice example that while pigs had long occurred in some parts of northern Vanuatu they arrived very late in others, through the historical agency of "pig missionaries." Traditional recollections of this kind can be immensely valuable ethnohistorically, but how far back, or in what respects, can oral traditions be regarded as useful by archaeologists?

CONCLUSIONS

As the papers in this volume suggest, maritime migration and colonization in the Indo-Pacific region remains an important theme but one in which, if anything, our understanding is less complete and more open to debate than it has seemed in the conventional models of regional prehistory. Yet, we see that state of affairs as quite desirable and ultimately productive. Archaeological philosophy and methodology are constantly changing, and archaeological conclusions can be no more authoritative than they are anywhere else in the historical sciences. Continuing research is producing robust answers to some questions, for example to relatively simple questions about chronology or the dispersal of introduced plants, animals or elements of material culture, but the more complex issues of what impelled the late Holocene migrations and the precise nature of these are likely to elude archaeology much longer yet, whatever the attractions of apparent answers from alternative approaches.

One of the more salient difficulties that we have faced in trying to understand Indo-Pacific migration and colonization has been the persistent desire to attempt to reinforce existing models rather than to expand our array of alternatives. At any level, the motives, sources, mechanisms, and results of maritime migration are likely to have been complex. Economic and technological hypotheses are important but there are others which have hardly been explored let alone examined systematically. These include especially the demographic imperatives associated with population growth (Keegan 1995) and their social consequences, including exile (Anderson 2006c).

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NOTE

1. The papers in this volume are mainly from the session: Maritime migration and colonization in the Indo-Pacific, held at the 18th Congress of the Indo-Pacific Prehistory Association Conference at the University of the Philippines, Quezon City, 20–26 March 2006. The session was convened by Atholl Anderson and Geoffrey Irwin and chaired by Sue O'Connor. Additional papers by Anderson and Summerhayes and Irwin are included here.

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ABSTRACT

In this Introduction we comment on issues raised by the present collection of papers as they appear relevant in thinking about the settlement of the Indo-Pacific from the Pleistocene to the late Holocene. Successful maritime migration across this vast region was obviously related to voyaging technology and colonizing behaviors. Here we critique earlier models that indicate simple unidirectional expansion and posit farming, or indeed any other single driver, for maritime expansion in the mid-late Holocene. It now appears that the development of interaction spheres in Wallacea, and perhaps connections with New Guinea, have contributed significantly to late Holocene societies in ISEA and Island Melanesia. Even in Remote Oceania where long-term colonizing success was dependent on a transported tropical horticultural complex, initial settlement strategies are likely to have been highly varied and to have had variable success. Nor is migration restricted to the founding events of island settlement; rather, it continued as a significant component of the formation and re-formation of island cultures up to the historical era and, of course, within the present day. Like the authors represented here we suggest that if we wish to make progress in understanding the motives, sources, mechanisms and results of colonizing migration, there will be greatest reward in exploring the complexity and variability that lie behind it. **KEYWORDS:** Maritime migration, Indo-Pacific, Island Southeast Asia, seafaring technology, voyaging strategies, Austronesian colonization, transported landscapes.